IN THE SPECIFICATION:

Please insert the following new paragraphs after the paragraph beginning on page 31 with "By monitoring the myotomes associated..." and ending on page 32 with "...bony posterior elements of the spinal column."

According to one embodiment, the monitoring system 120 detects the presence of (and optionally, the distance and/or direction to) nerves by determining a stimulation threshold current ("I_{thresh}") required to evoke a predetermined neuromuscular response (e.g. an EMG response of 100 uV). I_{thresh} decreases as the degree of electrical communication between a stimulation impulse and a nerve increases. Thus, I_{thresh} is indicative of the degree of communication between a stimulation source and a nerve and may therefore provide the user (by way of example only) with an indication of proximity and/or direction to the nerve.

In order to quickly determine I_{thresh}, the system may employ a threshold-hunting algorithm. According to one embodiment, the threshold-hunting algorithm employs a series of monopolar stimulations to determine the stimulation current threshold for each EMG channel that is in scope. The nerve is stimulated using current pulses with amplitude of I_{stim}. The muscle groups respond with an evoked potential that has a peak to peak voltage of V_{pp}. I_{thresh} Is the minimum I_{stim} that results in a V_{pp} that is greater than a known threshold voltage V_{thresh}. The value of I_{stim} is adjusted by a bracketing method as follows. The first bracket comprises two stimulation signals of different I_{stim}. By way of example the first bracket may comprise 0.2 mA and 0.3mA. If the V_{pp} corresponding to both of these stimulation currents is lower than V_{thresh}, then the bracket size is doubled to 0.2mA and 0.4mA. This exponential doubling of the bracket size continues until the upper end of the bracket results in a V_{pp} that is above V_{thresh}. The size of the brackets is then reduced by a bisection method. A current stimulation value at the midpoint of the bracket is used and if this results in a V_{pp} that is above V_{thresh}, then the lower half becomes the new bracket. Likewise, if the midpoint V_{pp} is below V_{thresh} then the upper half becomes the new bracket. This bisection method is used until the bracket size has been reduced to a predetermined accuracy. I_{thresh} may be selected from any value within the final bracket. By way of example, I_{thresh} may be selected as the midpoint of the final bracket.